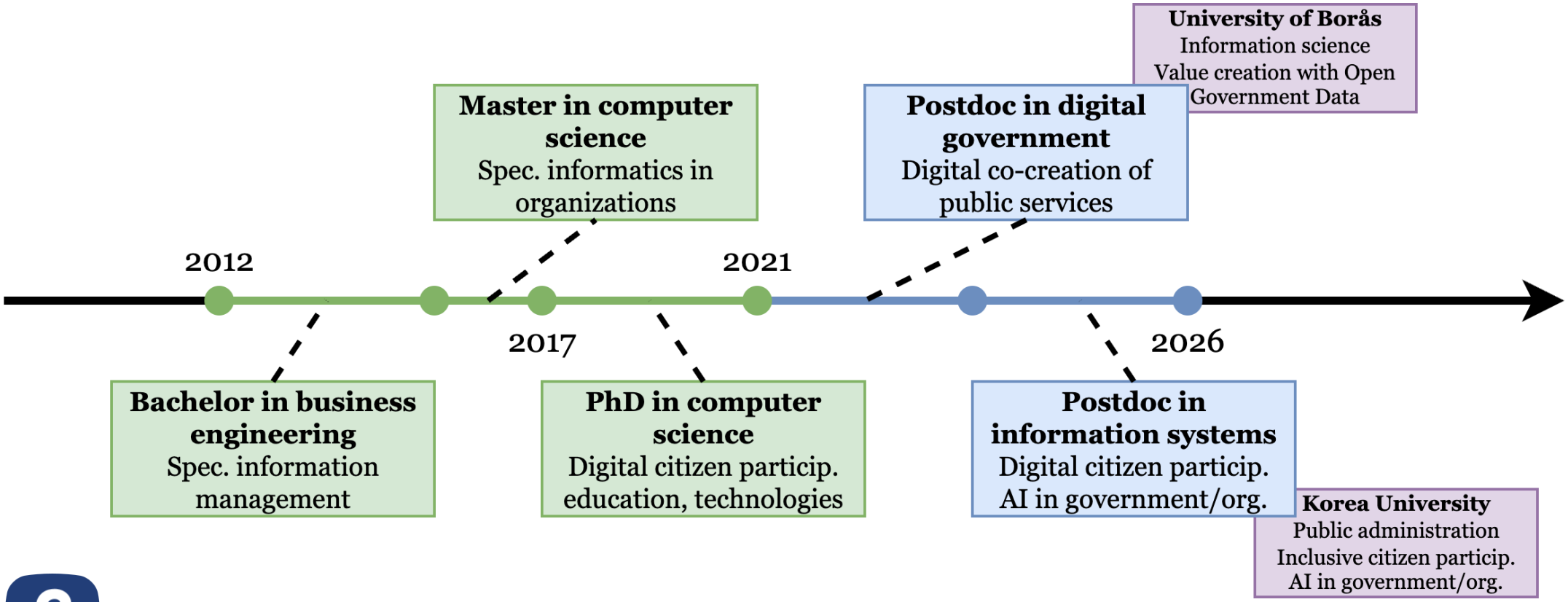


Between Optimism and Cautiousness: Frames of Artificial Intelligence Use in Citizen Participation

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One guiding question, many disciplines



Impact of public sector digital transformation on citizens

Human-computer interaction, information systems, public administration

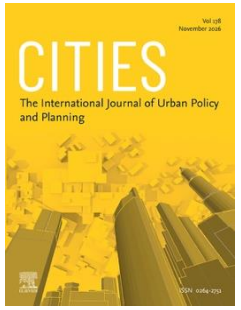
Research directions and publications

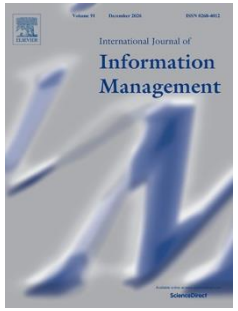
Impact of public sector digital transformation on citizens

Citizen particip. in policy-making and public services

- Design-oriented studies
  - Making Open Data portals more accessible and engaging
  - Facilitating exploration of citizens' ideas in crowdsourcing
  - Monitoring solutions for crowdsourcing ideas from citizens
- Studies of stakeholders' interpretations
  - Dynamics of human-AI delegation in organizations
  - Citizen-state inter. experiences of neurodivergent citizens
  - **Use of artificial intelligence in citizen participation**











digital government society

Association for Information Systems

Umeå University and the Department of Informatics

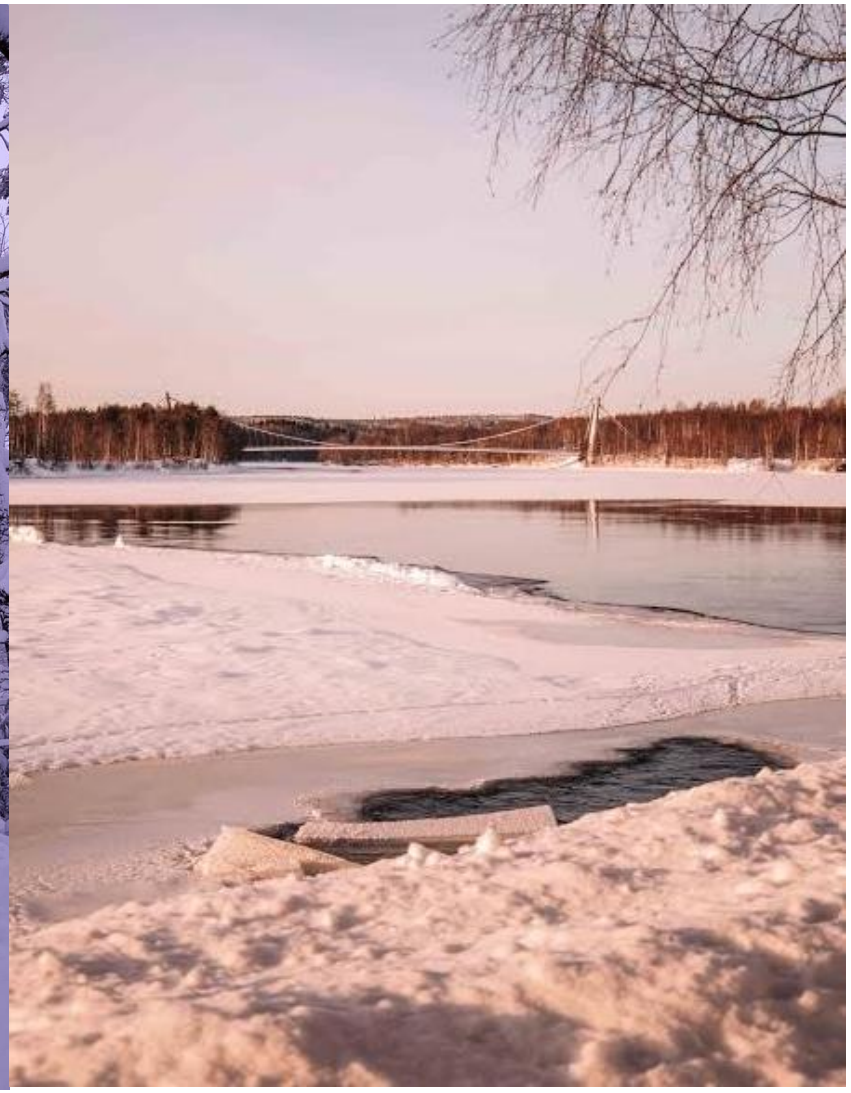




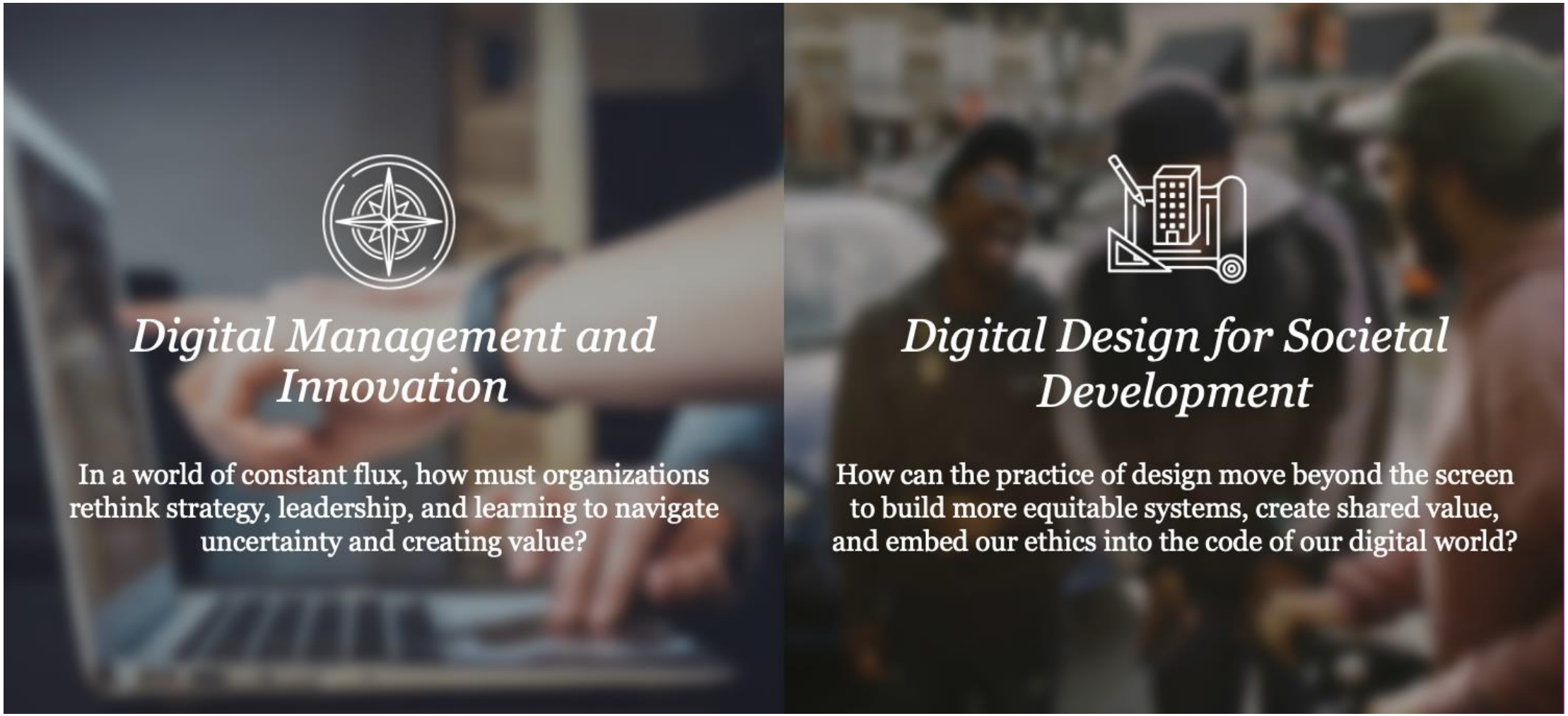
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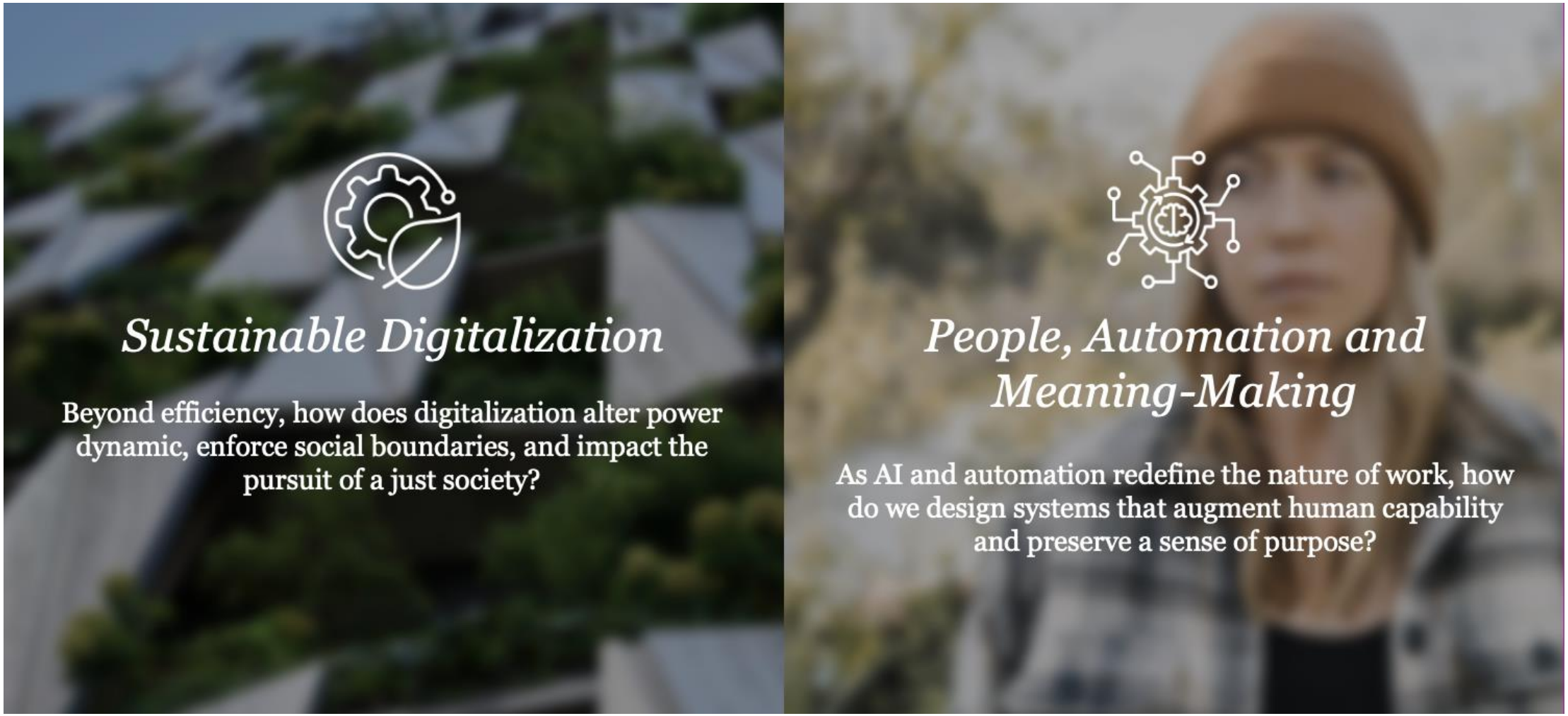




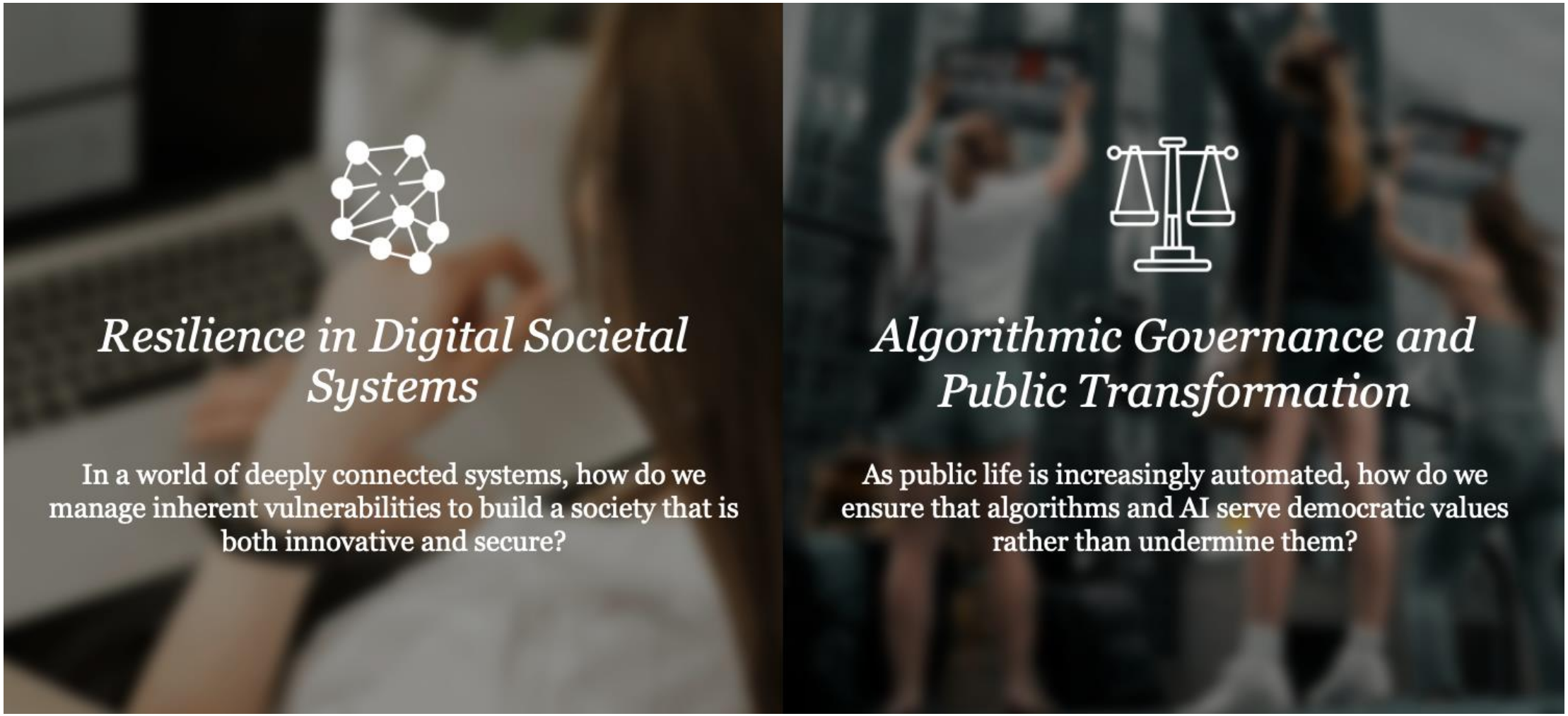
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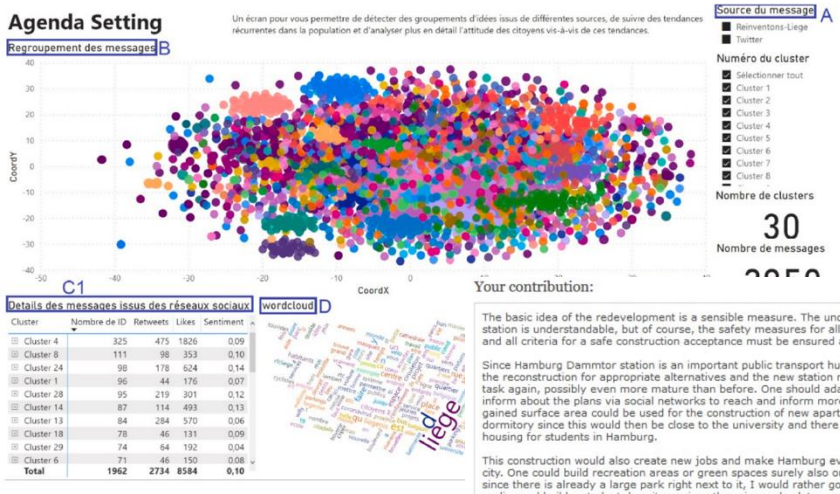


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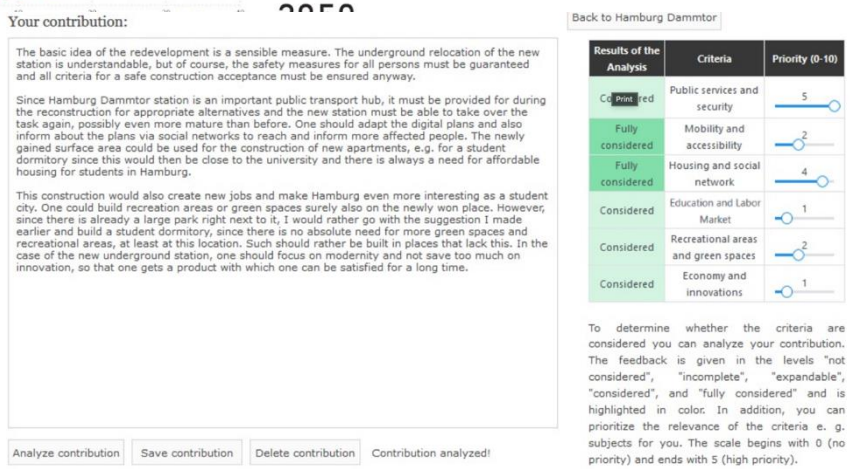


Frames of AI use in citizen participation – Context

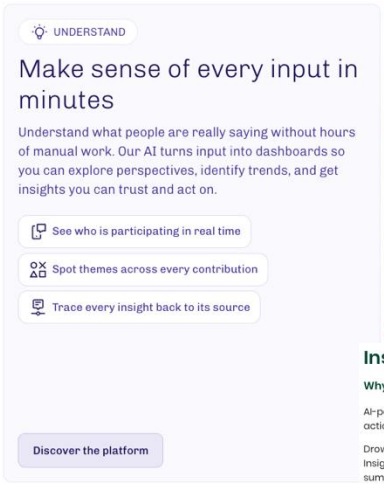
- Context of the research (practice entry point)
  - The use of AI in citizen participation is happening in both research and practice
  - LLMs offer new opportunities but present new challenges
  - The public conscience of AI has changed greatly in the past few years



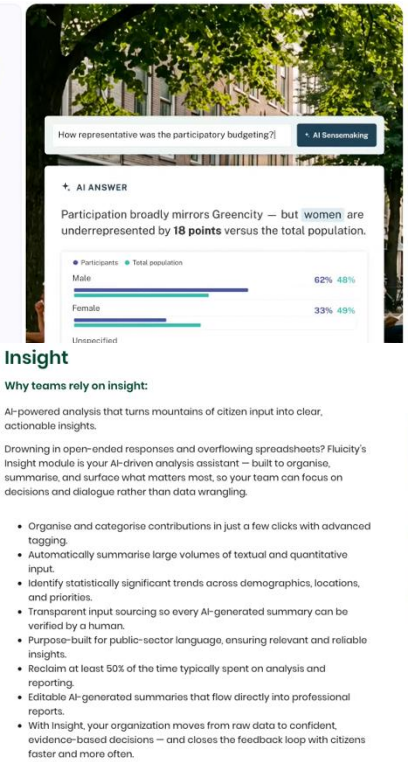
(Simonofski et al., 2021)

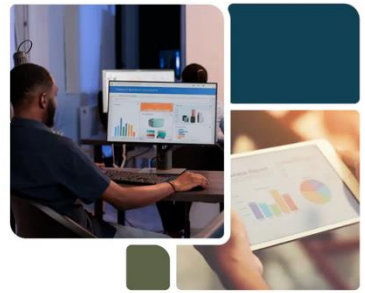


(Borchers et al., 2025)



(GoVocal)





(Fluicity)

Research question

- Adoption of AI in citizen participation is a multi-stakeholder problem
  - Citizens and participation practitioners (public officials, representatives, developers)
  - Differences of views on AI adoption can lead to resistance and technology misuse
  - Negative outcomes are particularly impactful in a government / democracy context

What do practitioners and citizens think of using AI in citizen participation? Where do agreements and disagreements lie?

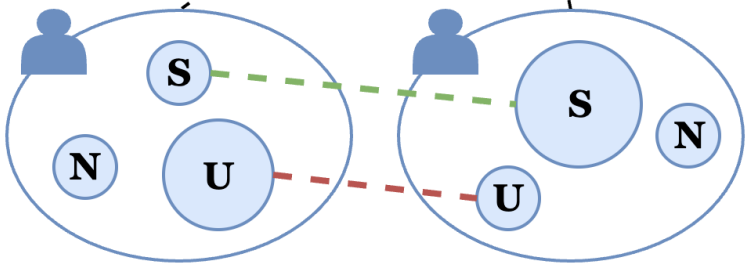
Theoretical lens – Technological Frames Theory

Antecedents

- Individual background
- Social position
- Interactions with others
- Characteristics of the organization
- Characteristics of the technology

Technological frames of reference
Assumptions, expectations individuals have about technologies

influence how individuals act
(Orlikowski & Gash, 1994)



Frame domains	
Nature of technology (N)	What technology is, its capabilities, and functionality
Technology strategy (S)	Rationale and barriers behind the (non-)adoption of a technology and strategic considerations for its implementation
Technology-in-use (U)	How the technology is integrated into daily routines, conditions that enable its use, and its positive and negative consequences

Key concepts and assumptions	
Congruence Incongruence	Incongruence frames differ in terms of assumptions and expectations; congruence means aligned rather than identical
(Relative) salience	Relative prominence of a frame, or a frame domain
Group-level	Individuals within the same group are expected to have more congruence frames compared to individuals across groups

Research question revisited

What do practitioners and citizens think of using AI in citizen participation? Where do agreements and disagreements lie?

↓

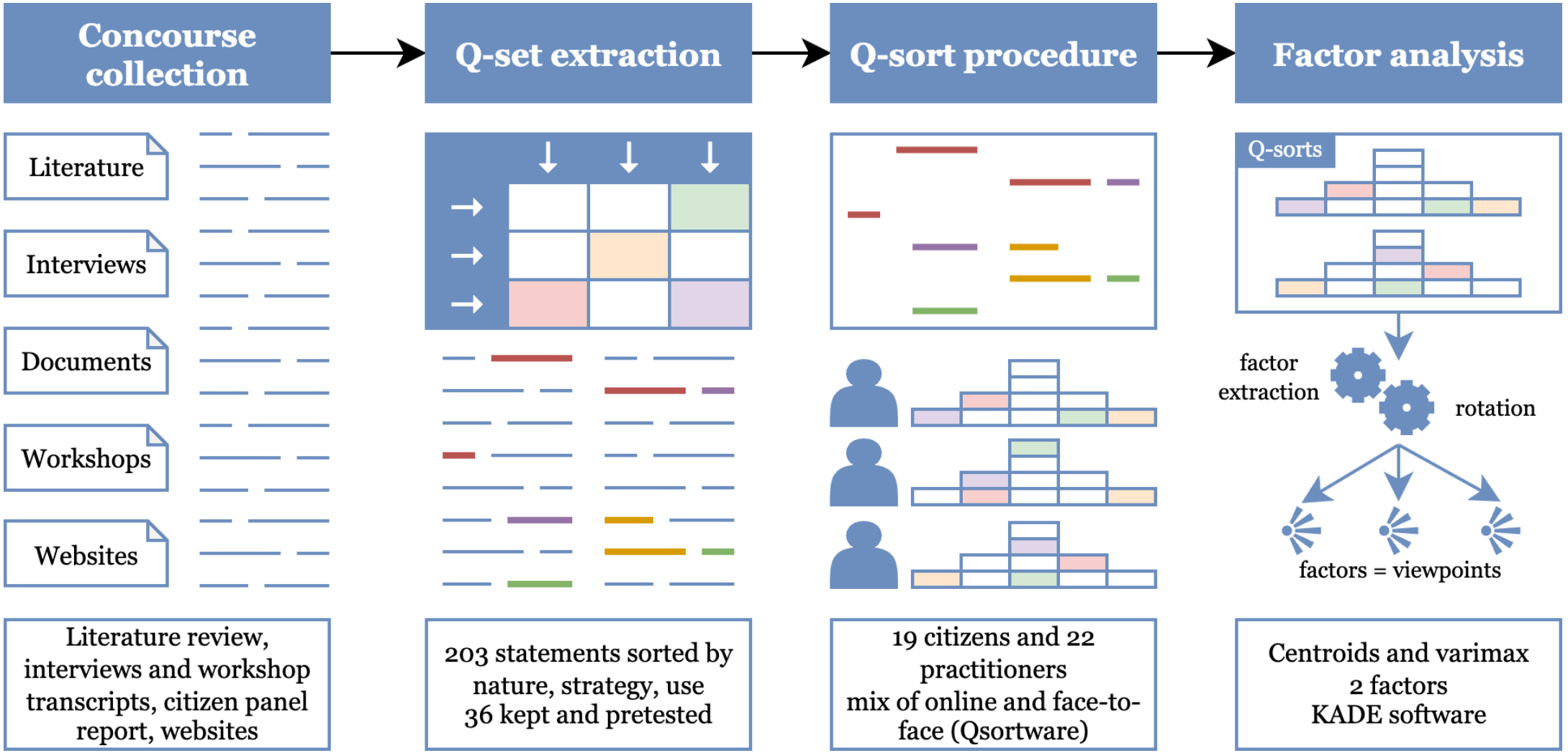
Through which technological frames do practitioners and citizens interpret the use of AI in citizen participation, and how congruent are these frames?

Methodology – Limitations of traditional approaches

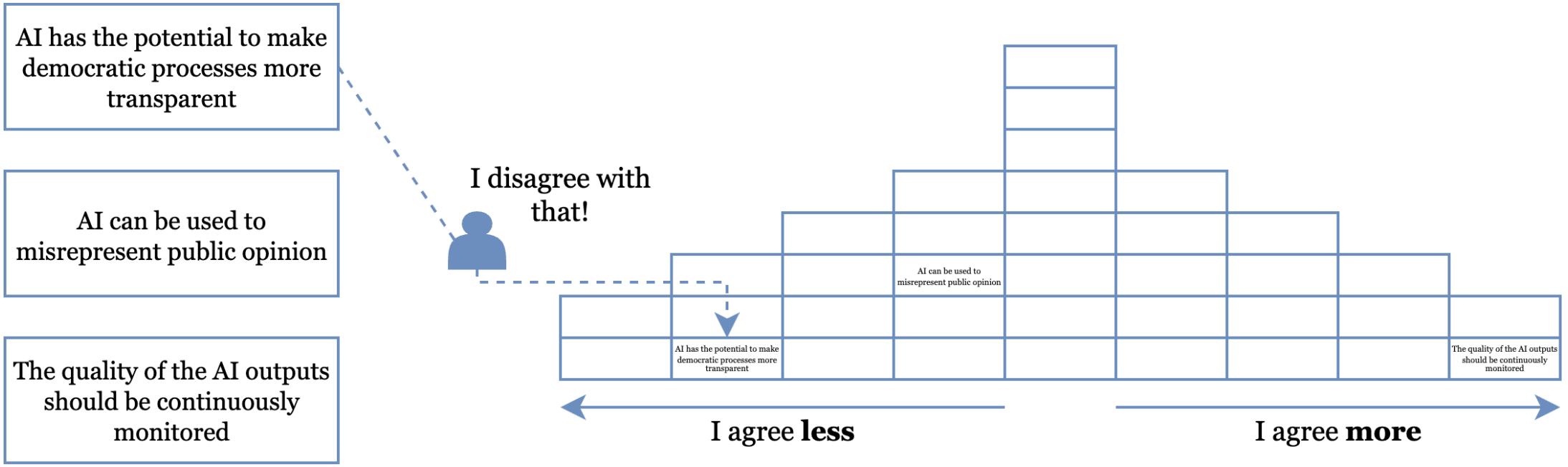
- Traditional methods of frames elicitations have shortcomings
  - **Interviews** provide rich data and reveal views diversity but make comparison difficult
  - **Questionnaires** are easy to compare but aggregated measures hide views diversity

- Q-methodology offers a systematic framework and procedures to study the subjective viewpoints of individuals
  - Allows identifying different viewpoints, even minority ones
  - Retains a high level of phenomenological richness
  - Well-suited to examine sociotechnical phenomena
  - Has a systematic procedure (Q-sort) that makes viewpoints comparable and reduces the researcher's influence

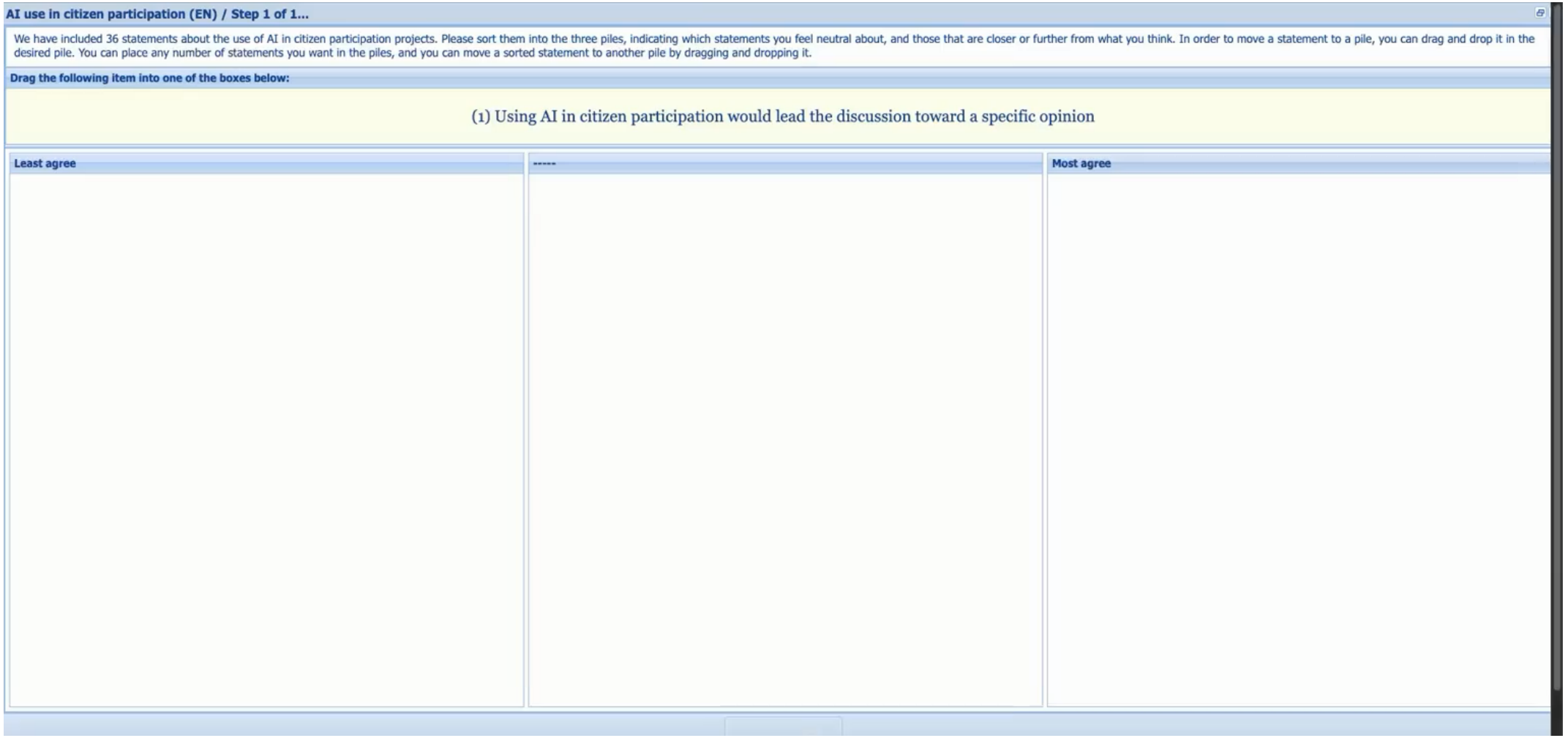
Methodology – General steps and instantiation



Methodology – General steps and instantiation

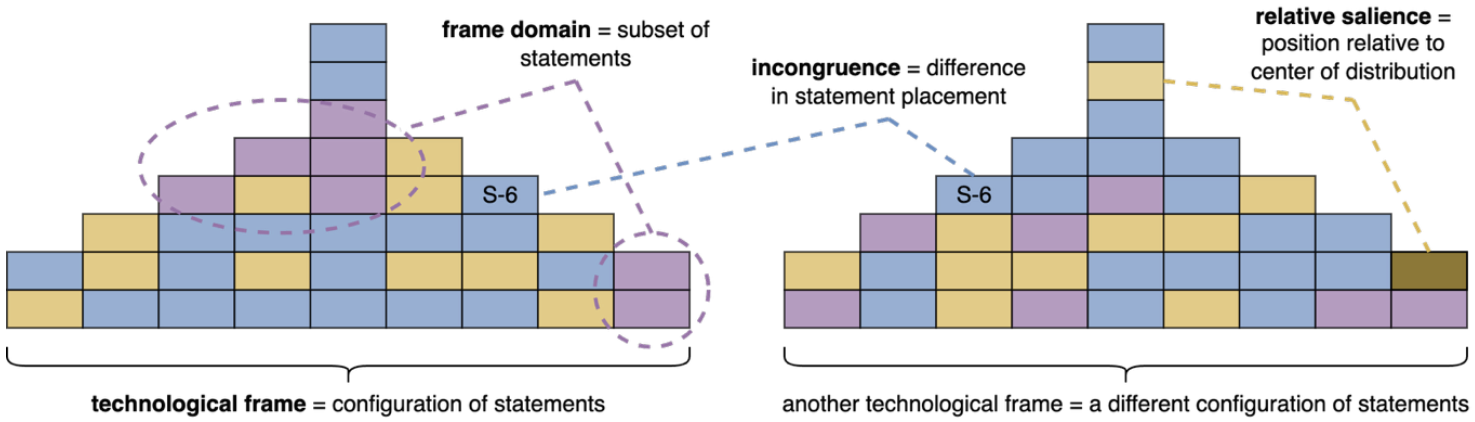


Methodology – Demonstration of Qsortware

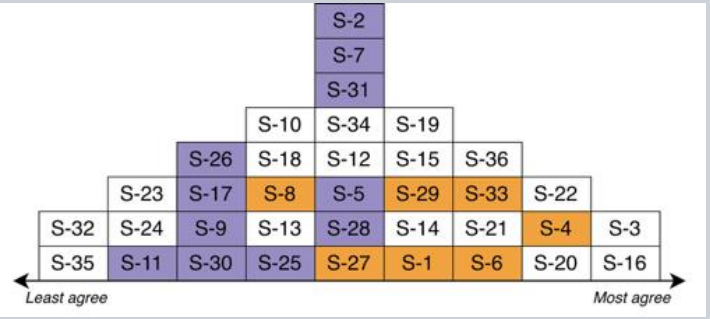
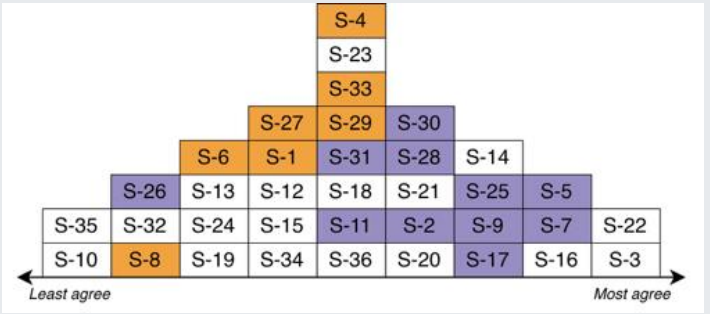


Bridging Technological Frames Theory and Q-methodology

- The operationalization of Technological Frames Theory using Q-methodology is rare, and guidelines are missing in the literature
  - One Q-sort = the technological frame of an individual
  - One factor (represented by a composite Q-sort) = one shared technological frame
  - One thematic group of statements = one frame domain
  - Differences / similarities in the placement of statements = incongruence / congruence
    - Measured at the individual, frame domain, and stakeholder group level
  - Statement placed at the extremes of the grid = high relative salience
    - Measured at the frame domain and stakeholder group level



Results – Two shared frames

Frame	Defining characteristics	Configuration of statements
Threat-cautious	(N) AI should be a tool assisting humans. Transparency is a critical issue (S) Future of participation does absolutely not lie with AI (S) Citizens should be informed of AI use and involved in AI development (S) Quality of AI outputs has to be monitored (U) Humans should keep control while interacting with AI (U) AI risks misrepresenting citizens' views (U) AI would make participation less inclusive and less transparent, and democracy less citizen-centered	
Opportunity-oriented	(N) AI should be a tool assisting humans. Transparency is a critical issue (S) Governments lack readiness for AI (S) Citizens should be informed of AI use (S) Quality of AI outputs has to be monitored (U) Humans should keep control while interacting with AI (U) AI can reduce knowledge gap across citizens and help governments understand what they want (U) AI can make participation more inclusive and democracy more citizen-centered	

Results – The expected and the unexpected

Theoretical propositions	Results	
We expect individuals belonging to the same stakeholder group to hold more similar technological frames than those belonging to different stakeholder groups.	Same number of citizens and practitioners in both frames, intra-group and inter-group incongruence is the same	✕
We expect the practitioners group to exhibit lower levels of incongruence than citizens.	Same level of incongruence within the citizen and the practitioner groups	✕
We expect knowledge of AI and experience of AI use to be associated with shared frames, beyond the belonging to stakeholder groups.	Both frames are equally represented across low and high levels of knowledge 53% of frequent AI users align with the opportunity-oriented frame, against only 29% of non-frequent AI users	○✕
We expect the nature frame domain, and in particular transparency and human augmentation, to exhibit a high degree of congruence.	Exceptionally high level of congruence for the transparency-related statements	○
We expect the strategy frame domain to exhibit a higher relative salience in practitioners' frames than in citizens' frames.	Similar level of relative salience across both groups for the strategy frame domain	✕
We expect to observe the highest degree of incongruence in the technology-in-use frame domain.	Much higher level of incongruence observed in the technology-in-use frame domain (inclusion, citizen-centricity)	○

Contributions to practice and literature

AI in government literature	Identification of two shared frames and description across a holistic set of frame domains Contradiction between the importance and impact of transparency Practitioners seem to bring technological frames from home
Technological frames literature	Novel operationalization framework to elicit technological frames using Q-methodology Highlight of the pros and cons of using Q-methodology to elicit frames (rich and comparable frames, but cross-sectional)
Citizen participation practice	Highlight that inclusion of citizens is not enough, active inclusion of diverse viewpoints is necessary Incongruences as priority areas for discussion Reusable procedure to identify and compare frames of AI

The quest for publication (the challenge of positioning theory and method)

- **Government Information Quarterly**: better define the scope of AI, theory is underused, questions on the suitability and added-value of Q-methodology
  - Anticipatory technological frames, theory used to interpret the results
- **Public Administration Review**: better define the scope of citizen participation, theory categories constrains interpretation too much, methodological clarifications
  - Details on scope and methodology, better theoretical grounding
- **International Review of Administrative Sciences**: use examples to better define the scope, bridge technological frames and AI in citizen participation with theoretical propositions, methodological clarifications
  - Examples, better introduction of theory, formulation of expectations
  - More rigorous operationalization of the theory, contributions to technological frames literature



